UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/620,866	BRYANT ET AL.
	Examiner	Art Unit	
	Anthony Sol	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 August 2007*.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21,23-26 and 28-32* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21,23-26 and 28-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment filed 8/31/2007 is acknowledged.

- Claims 1, 9, 10, 18, 19, 23, 24, and 28-32 have been amended.

- Claims 22 and 27 have been canceled.

- Claims 1-21, 23-26, and 28-32 remain pending.

Claim Objections

1.   Claim 9 is objected to because of the following informalities:

For claim 9, line 6, it is believed that the phrase, "a forwarding node:" should

state -- at a forwarding node:--.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

2.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine,
manufacture, or composition of matter, or any new and useful improvement
thereof, may obtain a patent therefor, subject to the conditions and requirements
of this title.

Claims 9, 18, 23, 28, 30 and 32 are rejected under 35 U.S.C. 101 because the

computer readable medium as defined in the specification on paragraphs 71 and 74

includes a carrier wave, which is further defined as signals. Thus, the medium is

nothing more that a signal for carrying the data; therefore the claim is a signal claim

which is non-statutory.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4.   Claims 29-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to

comply with the enablement requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the

invention.

Claims 29-32 recite the limitation "assigning to an available node a negative of a

cost of reaching the available node from the first node". However, the specification at

page 17 only discloses the "current cost of each reachable node then is replaced with

the negative of the *cost from that node **back** to node A* which can be obtained from a

reverse SPF routed at node A". **(emphasis added).** In other words, the disclosure

appears to be concerned with the cost from the root node back to a reachable node,

whereas the claims recite the cost from the reachable/available node to the first/root

node.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject-matter which the applicant regards as his invention.

6.   Claims 29-32 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

Claims 29-32 recites the limitation "assigning to an available node a negative of a

cost of reaching the available node from the first node". It is unclear how assigning a

node a negative cost of reaching the available node from the first node helps in

constructing a backup route from a first node.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

8.   Claim 1-21, 23-26, and 28 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Pub. No. US 2003/0053414 A1 ("Akahane") in view of Pub. No. US

2002/0037010 A1 ("Yamauchi").

Regarding claims 1, 9, 10 and 18,

Akahane discloses a step performed at a forwarding node (fig. 9, CR3 153) of recognizing a tunneled packet (para. 60, *MPLS* network is a tunneling network) identifying a neighbor node (fig. 9, CR2 152) to the forwarding node as tunnel end point (paras. 57-60, Note that CR3, the forwarding node recognizes via the label distribution protocol as described in para. 9, that CR2 is the end point).

Akahane further discloses removing the header (para. 58, *CR3 removes one front Shim header (L31, E1)*).

Akahane still further discloses forwarding the payload to the neighbor node (para. 58, CR3 transmits P1 to the line 184 to CR2).

Akahane does not disclose that CR2 is the tunnel end point.

Yamauchi discloses that a router immediately preceding a PE router executes penultimate hop popping for removing the first-stage MPLS label. Specifically, a core router immediately preceding a PE router, which is located at the outlet of an MPLS-VPN service network, executes penultimate hop popping for decapsulating an MPLS label (para. 22).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify packet transferring method of Akahane to include penultimate hop popping as taught by Yamauchi. One skilled in the art would have been motivated to make the combination so that a label table doe not have to be searched twice according to a certain search method of the label table, which requires longer processing time (Akahane, para. 19).

Regarding claims 2 and 11,

Akahane discloses a Penultimate Hop Popping (PHP) method in which the CR3

pops the front Shim header of the received P1 packet that is tunneled to the neighbor

node CR2 (para. 58). Akahane further discloses label distribution protocol using Label

Switch Paths using labels that identify the route taken by the packet (para. 9).

Therefore, CR3 records tunnel end points and permission to remove headers.

Regarding claims 3 and 12,

Akahane discloses setting Label Switched Paths manually by a network

administrator (para. 9).

Regarding claims 4 and 13,

Akahane discloses Label Switched Paths (LSP) that are set by label distribution

protocol (LDP) (para. 9).

Regarding claims 5, and 14,

Akahane shows in fig. 9, setting a Label Switch Paths from CR1 to CR3 to CR2

before utilizing the PHP method using LSP and LDP.

Regarding claims 6 and 15,

Akahane shows in fig. 9, that P1 171 is a direct forwarded packet.

Regarding claims 7 and 16,

Akahane shows in fig. 9 IP/GRE/MPLS/IP payload as indicated by for example

labels L12 and L31 (claimed MPLS) in an IP network (paras. 2-4).

Regarding claims 8 and 17,

Akahane shows in fig. 9, encapsulating at node CR1, a packet P1 with headers

E1, L12, E1, L31 to tunnel the packet to the end point CR2.

Regarding claims 19, 23, 24 and 28,

Akahane shows in fig. 9, constructing as a repair path around a component

1020-1 in the data communications network a tunnel 1020-2 having an end point CR2

152 prior to issuing a notification from the notifying node CR1 151.

Akahane discloses a step performed at a notifying node (fig. 9, CR1 151) of

notifying a forwarding node (fig. 9, CR3 153) of the identity of an end point (paras. 57-

60, Note that CR3, the forwarding node recognizes via the label distribution protocol as

described in para. 9, that CR2 is the end point).

Akahane discloses permitting the forwarding node to process tunneled packets to

the tunnel end point by removing the header (para. 58, *CR3 removes one front Shim*

header (L31, E1)) and forwarding the payload to the tunnel end point (para. 58, CR3

transmits P1 to the line 184 to CR2).

Akahane does not disclose that CR2 is the tunnel end point.

Yamauchi discloses that a router immediately preceding a PE router executes penultimate hop popping for removing the first-stage MPLS label. Specifically, a core router immediately preceding a PE router, which is located at the outlet of an MPLS-VPN service network, executes penultimate hop popping for decapsulating an MPLS label (para. 22).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify packet transferring method of Akahane to include penultimate hop popping as taught by Yamauchi. One skilled in the art would have been motivated to make the combination so that a label table doe not have to be searched twice according to a certain search method of the label table, which requires longer processing time (Akahane, para. 19).

Regarding claims 20 and 25,

Akahane discloses that the Label Switched Paths (LSP) are set by label distribution protocol, or set manually by a network administrator.

Regarding claims 21 and 26,

Akahane shows in fig. 9, that forwarding node CR3 is a neighbor node to the tunnel end point CR2.

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10.   Claims 29-32 are rejected under 35 U.S.C. 102(e) as being anticipated by

Pub. No. US 2004/0151181 A1 ("Chu") as best understood (see 35 USC § 112

rejections above).

Regarding claims 29-32,

Chu shows in figs. 2A, 2B, and 2C computing a spanning tree, rooted at the first

node, of available nodes, which excludes nodes reachable by traversing a component

(paras. 37 and 38).

It is inherent that an available node has a negative of the cost from that node

back to the root node when using the reverse SPF routed at the root node.

Chu discloses re-computing the spanning tree taking into account the assigned

cost (para. 37, *When there is a failure along one of the connections, the*

modules are able to detect the failure and reroute the connections. Another

spanning tree is then formed to ensure failure-free connections between the BMs

and the proper operation of the LAN).

Response to Arguments

11.   Applicant's arguments with respect to claims 1, 10, 19, 24, and 29 have been

considered but are moot in view of the new ground(s) of rejection.

Conclusion

12.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Anthony Sol whose telephone number is (571) 272-

5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

WING CHAN
SUPERVISORY PATENT EXAMINER

AMS

1/4/2008